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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: FTSZ-POLYPEPTIDES AS A TARGET FOR HERBICIDAL COMPOUNDS

(57) Abstract: The present invention relates to nucleic acids containing a nucleotide sequence encoding a polypeptide as a target for herbicidal compounds, to said polypeptides or biologically active derivatives thereof, and to a method for developing herbicidal compounds using test systems containing said polypeptides.

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/EP 03/14162

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 C07K14/415 C12N15/82

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 C07K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, BIOSIS, EMBASE, WPI Data

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>STREPP R ET AL: "Plant nuclear gene knockout reveals a role in plastid division for the homolog of the bacterial cell division protein FtsZ, an ancestral tubulin"</p> <p>PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF USA, NATIONAL ACADEMY OF SCIENCE. WASHINGTON, US, vol. 95, April 1998 (1998-04), pages 4368-4373, XP002135451</p> <p>ISSN: 0027-8424</p> <p>the whole document</p> <p>-----</p> <p style="text-align: center;">-/-</p>	1-7
A		

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

° Special categories of cited documents :

- °A° document defining the general state of the art which is not considered to be of particular relevance
- °E° earlier document but published on or after the International filing date
- °L° document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- °O° document referring to an oral disclosure, use, exhibition or other means
- °P° document published prior to the International filing date but later than the priority date claimed

- °T° later document published after the International filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- °X° document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- °Y° document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- °&° document member of the same patent family

Date of the actual completion of the International search

27 May 2004

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25.10.04

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## INTERNATIONAL SEARCH REPORT

International Application No  
PCT/EP 03/14162

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	KIESSLING JUSTINE ET AL: "Visualization of a cytoskeleton-like FtsZ network in chloroplasts" JOURNAL OF CELL BIOLOGY, vol. 151, no. 4, 13 November 2000 (2000-11-13), pages 945-950, XP002282246 ISSN: 0021-9525 cited in the application the whole document -----	1-7
X	MCANDREW ROSEMARY S ET AL: "Colocalization of plastid division proteins in the chloroplast stromal compartment establishes a new functional relationship between FtsZ1 and FtsZ2 in higher plants" PLANT PHYSIOLOGY (ROCKVILLE), vol. 127, no. 4, December 2001 (2001-12), pages 1656-1666, XP002282503 ISSN: 0032-0889 the whole document -----	1-7
A	OSTERYOUNG KATHERINE W ET AL: "The plastid division machine" ANNUAL REVIEW OF PLANT PHYSIOLOGY AND PLANT MOLECULAR BIOLOGY, 2001, pages 315-333, XP009031308 Annual Reviews [a], 4139 El Camino Way, Palo Alto, CA, 94303-0139, USA Series: Annual Review of Plant Physiology and Plant Molecular Biology (ISSN 1040-2519) ISBN: 0-8243-0652-X (cloth) -----	
T	RENSING STEFAN A ET AL: "Diversification of ftsZ during early land plant evolution." JOURNAL OF MOLECULAR EVOLUTION, vol. 58, no. 2, February 2004 (2004-02), pages 154-162, XP002282247 ISSN: 0022-2844 the whole document -----	1-7

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## INTERNATIONAL SEARCH REPORT

national application No.  
PCT/EP 03/14162

### Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:
  
2.  Claims Nos.: 8 because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:  
see FURTHER INFORMATION sheet PCT/ISA/210
  
3.  Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

### Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1.  As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
  
2.  As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
  
3.  As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
  
4.  No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:  
1-7 all partially

#### Remark on Protest

The additional search fees were accompanied by the applicant's protest.

No protest accompanied the payment of additional search fees.

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

Continuation of Box I.2

Claims Nos.: 8

Present claim 8 relates to a compound defined by reference to a desirable characteristic or property, namely that it has been obtained by using the method according to claim 7.

The claims cover all compounds having this characteristic or property, whereas the application provides support within the meaning of Article 6 PCT and disclosure within the meaning of Article 5 PCT for no such compounds. In the present case, the claims so lack support, and the application so lacks disclosure, that a meaningful search over the whole of the claimed scope is impossible. Independent of the above reasoning, the claims also lack clarity (Article 6 PCT). An attempt is made to define the compound by reference to a result to be achieved (herbicidal). Again, this lack of clarity in the present case is such as to render a meaningful search over the whole of the claimed scope impossible. Consequently, no search has been carried out for claim 8.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.5), should the problems which led to the Article 17(2) declaration be overcome.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-7 all partially

The *Physcomitrella patens* FtsZ polypeptide of SEQ ID No. 3, the nucleic acids encoding it (SEQ ID No. 1), vectors comprising said nucleic acid, transgenic plants and host organisms comprising said nucleic acid or vector, method for developing herbicidal compounds using test systems using said polypeptide.

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2. claims: 1-7 all partially

The *Physcomitrella patens* FtsZ polypeptide of SEQ ID No. 4, or a truncated variant thereof (SEQ ID No. 5), the nucleic acids encoding them (SEQ ID No. 2), vectors comprising said nucleic acid, transgenic plants and host organisms comprising said nucleic acid or vector, method for developing herbicidal compounds using test systems using said polypeptide.

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